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NOTES ON GEOGRAPHIC DISTRIBUTION

# Geographic distribution of Epiplateinae Steyskal (Diptera: Richardiidae): New records and distribution maps

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**ABSTRACT:** Epiplateinae is a small subfamily of Richardiidae composed by three genera: *Automola* Loew, *Epiplatea* Loew and *Omomyia* Coquillett. *Automola* and *Epiplatea* have three and five valid species, respectively; both are widespread in the Neotropical Region. *Omomyia* has three valid species, which are restricted to arid areas of the southwestern United States. A list of all species of Epiplateinae, their previously known distribution and new records are provided. Material examined and maps with the geographic distribution of each species are also provided.

Richardiidae is a relatively small family, consisting of about 180 species in 33 genera (Hancock 2010), mostly Neotropical in distribution. A few species have been recorded from the Nearctic Region, and there are no records to Chile and Patagonia (Aczél 1950; Steyskal 1968).

Currently, Richardiidae is divided into two subfamilies: Richardiinae Snow and Epiplateinae Steyskal. Initially, McAlpine (1976) suggested that *Automola* Loew, *Epiplatea* Loew and *Omomyia* Coquillett belonged to a distinct group in Richardiidae. Subsequently, Steyskal (1987) proposed a new subfamily, Epiplateinae, to allocate those three genera. Epiplateinae is quite homogeneous morphologically, and a preliminary phylogenetic analysis indicates that the subfamily is a strongly supported monophyletic group (Wendt and Ale-Rocha, unpublished data). The three genera are small: *Automola* and *Omomyia* have three species each, and *Epiplatea* has five species. *Automola* and *Epiplatea* are widespread and occur in many regions of the Neotropics, but records of their component species are dispersed, scarce and outdated (Hendel 1911; Hennig 1937; Steyskal 1958). The distribution of *Omomyia* is restricted to arid areas in the southwestern portion of the United States of America, and the last contribution on the genus was published by Steyskal (1973).

In this contribution we provide a list of Epiplateinae species and their known distribution based on the literature, new records and material examined. We also provide maps with the geographic distribution of each species. The material examined belongs to the following institutions (curator name within parenthesis): Canadian National Collection of Insects, Arachnids and Nematodes, Ottawa, Ontario, Canada – CNC (Dr. Jeff H. Skevington); Coleção Zoológica do Maranhão, Caxias, Maranhão, Brazil – CZMA (Dr. Francisco Limeira de Oliveira); Coleção Zoológica Prof. Paulo Bührnhein, Departamento de Biologia, Universidade Federal do Amazonas, Manaus, Brazil – CZPB (Dr. Nair O. Aguiar); Coleção Entomológica Padre Jesus Santiago Moure, Departamento de Zoologia, Universidade Federal do Paraná, Curitiba, Paraná, Brazil – DZUP (Dr. Claudio José B. de Carvalho); Entomological Museum, Logan, Utah State University, Utah, United States – EMUS (Dr. Wilford J. Hanson); The Hunterian (Zoology Museum), Univeristy of Glasgow, Glasgow, Soctland, UK – GLAHM (Dr. E. Geoffrey Hancock); Coleção de Invertebrados, Instituto Nacional de Pesquisas da Amazônia, Manaus, Amazonas, Brazil – INPA (Dr. Augusto L. Henriques); Museu Nacional do Rio de Janeiro, Rio de Janeiro, Brazil – MNRJ (Dr. Márcia Souto Couri); Museu Paraense Emílio Goeldi, Belém, Pará, Brazil – MPEG (Dr.

**TABLE 1.** List of species of Epiplateinae Steyskal (Diptera, Richardiidae), followed by previously known distribution and new records.

| SPECIES | PREVIOUSLY KNOWN DISTRIBUTION | NEW RECORDS |
|---|---|---|
| *Automola atomaria* (Wiedemann) | Costa Rica; Guyana; Mexico; Peru; Bolivia; Paraguay; Argentina; Brazil: MG, RS. | Brazil: RO, AM, ES, SP, SC. Trinidad & Tobago: Trinidad, Ecuador |
| *Automola caloptera* (Bigot) | Guyanna; Peru; Bolivia; Costa Rica; Brazil: PA, BA. | Brazil: AP, AM, RO. Ecuador |
| *Automola rufa* Cresson | USA: TX, AZ, NM; Mexico: Aguascalientes, Morelos. | Mexico: Durango, Puebla |
| *Epiplatea arcuata* Hendel | Guyana; Peru; Brazil: PA. | Brazil: RR, AM. Bolivia |
| *Epiplatea erosa* Loew | Cuba, Porto Rico, Dominican Republic. | Costa Rica |
| *Epiplatea hondurana* Steyskal | Honduras. | Costa Rica |
| *Epiplatea isthmi* Steyskal | Panama. | Costa Rica |
| *Epiplatea recta* Hendel | Paraguay. | Brazil: SC, RS |
| *Omomyia hirsuta* Coquillett | USA: CA, AZ. | USA: UT |
| *Omomyia melanderi* Steyskal | USA: CA. | USA: NV |
| *Omomyia regularis* Curran | USA: CA, AZ, NM. | USA: UT, TX |

**Abbreviatons to states:** Brazil - AM: Amazonas; AP: Amapá; BA: Bahia; ES: Espírito Santo; MG: Minas Gerais; RO: Rondônia; RR: Roraima; SC: Santa Catarina; SP: São Paulo. United States of America - AZ: Arizona; CA: California; NM: New Mexico; TX: Texas; UT: Utah.

Orlando T. Silveira); Senckenberg Natural History Collections Dresden, Museum of Zoology (Museum fuer Tierkunde), Dresden, Germany – MTD (Dr. Uwe Kallweit); Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil – MZSP (Dr. Carlos José E. Lamas). State abbreviations as follows: Brazil – AM: Amazonas; AP: Amapá; BA: Bahia; ES: Espírito Santo; MA: Maranhão; MG: Minas Gerais; RO: Rondônia; RR: Roraima; SC: Santa Catarina; SP: São Paulo. United States of America – AZ: Arizona; CA: California; NM: New Mexico; TX: Texas; UT: Utah.

***Automola* Loew** (Figure 1)

**Comments:** Species are characterized as follows: body 5.0-9.0 mm in length, robust, yellow orange, brown or dark brown. The species of the genus differ from the species of *Epiplatea* and *Omomyia* in having the wing with conspicuous circular and/or transversal spots and vein $R_1$ ciliated on dorsal surface; proepimeron with robust seta and proepisternum ciliated. *Automola* has three valid species. *Automola atomaria* (Wiedemann) and *A. caloptera* (Bigot) are widespread in the Neotropical Region; *Automola rufa* Cresson has restrict distribution in the southeastern United States of America and Mexico. It should be noted that *A. automola* is sexually dimorphic. We illustrate a male (Fig. 1) and the wing pattern of females is shown by Hancock (2010; Fig 65.4).

***Automola atomaria*** (Wiedemann), 1830: 461 (*Ortalis*). Type-locality: "Brazil".

**Geographic distribution** (Figure 1)**:** Mexico: Atoyac, Veracruz (Wulp 1899); Costa Rica (Hancock 2010), Atenas (Steyskal 1958); Trinidad & Tobago: Trinidad (new record); Guyana: Kartabo (Curran 1934a); Brazil: MG (Hendel 1911), RS (Hennig 1937), AM, RO, ES, SP and SC (new records); Ecuador (new record); Peru: Meshagua, Pichis (Hendel 1911); Bolivia: Mapiri, Suapi (Hendel 1911); Paraguay (Hendel 1911); Argentina: Misiones (Steyskal 1958).

**Material examined: Costa Rica, Guanacaste,** 3 km southeast to Naranjo River, 1-15.v.1992, F.D. Parker col. (1 female, EMUS); idem, 11-20.vii.1992, idem (1 male, 1 female EMUS); idem, 13.vii.1992, idem (1 male, EMUS); idem, v.1993, idem (1 male, EMUS); idem, 14-20.viii.1993, idem (1 male, EMUS); 14 km south to Cañas, 3.iii.1990, idem (1 female, EMUS); 13.iii.1990, idem (2 females, EMUS); 26-30.ix.1990, idem (1 male, 1 female, EMUS); idem, 16-19.xi.1990, idem (1 male, EMUS); **Alajuela,** 20 km south to Upala, 15.vii.1990, idem (1 female, EMUS); idem, 7-9.viii.1990, idem (1 female, EMUS); idem, 14-17. viii.1990, idem (1 male, EMUS); idem, 30.x.1990, idem (3 females, EMUS); idem, 1.xi.1990, idem (1 male, 1 female, EMUS); idem, 6.xi.1990, idem (1 female, EMUS); idem, 8.xi.1990, idem (2 males, 1 female, EMUS); idem, 13.xi. 1990, idem (2 males, EMUS); idem, 29.xi.1990, idem (2 females, EMUS); idem, 6.xii.1990, idem (1 male, EMUS); idem, 11.xii. 1990, idem (2 males, 4 females, EMUS); idem, 13.xii.1990-9.i.1991, idem (1 male, EMUS); idem, 25.xii.1990, idem (1 male, EMUS); idem, 30.xii.1990 idem (1 male, 3 females, EMUS); idem, 6.i.1991, idem (1 female, EMUS); idem, 8.i.1991, idem (1 female, EMUS); idem, 31.i.1991, idem (1 male, EMUS); idem, 5.ii.1991, idem (1 female, EMUS); idem, 7.ii.1991, idem (2 females, EMUS); idem, 12.ii.1991 idem (1, male, EMUS); idem, 26.ii.1991, idem (3 females, EMUS); idem, 10-19.iii.1991, idem, (1 male, 1 female, EMUS); idem, 20-26.iii.1991, idem (1 male, EMUS); idem, 22-31.v.1991, idem (1 female, EMUS); idem, 11-20.iv.1991, idem (1 male, EMUS); idem, 1-11.vi.1991, idem (1 male, EMUS); idem, 16-17.vi.1991, idem (1 male, EMUS); idem, 1-10.x.1991, idem (1 male, 1 female, EMUS); idem, 11-21.ix. 1991, idem (2 males, EMUS); **Cartago,** near Tuis, 16-22.vi.1993, W.J. Hanson col. (1 male, EMUS); **Trinidad & Tobago**, **Trinidad**, Arima Valley, 25.viii.1998, E.G. Hancock col. (2 males, 1 female, GLAHM); Hollis Dam, 12 July 1994, E.G. Hancock col. (1 male, GLAHM); **Brazil, Amazonas,** Guajará, Rio Ipixuna, 07°06'39" S 73°05'25" W, 13-19.vi.1995, P.F. Bührnheim and N.O. Aguiar cols (2 males, 10 females, CZPB); Coari, Rio Urucu SUC-2 [Campo Sudoeste do Rio Urucu =Southwest Urucu River Field], 04°57'58" S 65°19'38" W,14-24.v.1993, P.F. Bührnheim et al. cols. (20 males, CZPB); idem, RUC-27 [Campo Rio Urucu=Urucu River Field], 04°49'34" S 65°15'37" W, 05-18iii.1994, idem (1 male, CZPB); idem LUC-09 [Campo Leste do Rio Urucu=East Urucu River Field], 04°51'56" S 65°0456" W, 25.i-10.ii.1995, idem (2 males, CZPB); Juruá, Mineruazinho 03°34'85" S 66°59'15" W, 13-25.i.1996, P.F Bührnheim, N.O. Aguiar et al. cols. (4 males, 5 females, CZPB); Rio Negro, Parque Nacional do Jaú, 18-20.vii.1993, L.S. Aquino col. (1 female, INPA); Manaus, Reserva Ducke, 6.iii.1968, without col. (1 female, INPA); idem, 24.i.1978, L. Albuquerque col. (1 male, INPA); idem, 12.iii.1978, idem (1 male, 3 females, INPA); idem, 26.vi.1979, idem (1 female, INPA); idem, 30.xii.1981, J.A. Rafael col. (1 male, INPA); idem, 02°55'51" S 59°58'59" W, 6-9.iii.2008, G.P.S. Dantas col. (1 male, INPA); Estrada Manaus-Boa Vista, BR174, km 53, vi.1972, Roppa col. (1 male, MZSP); Maués, Rio Abacaxis, 05°15'09" S 58°11'52" W, 26-29.v.2008, J.A. Rafael col. (1 male, INPA); **Rondônia,** Ouro Preto do Oeste, 30.iii.1985, M.F. Torres col. (1 male, MPEG); Cálama, 19-21. xi.1975, Expedição Permanente à Amazônia col. (1 female, MZSP); 62 km Southeast to Ariquemes, 17-24.iii.1989, W.J. Hanson col. (12 males, 2 females, EMUS); idem, 15-22.iii.1991, idem (4 males, 1 female, EMUS); idem, 13-25.iv.1992, idem (8 males, 9 females, EMUS); idem, 8-20. xi.1994, idem (3 males, EMUS); idem, 5-16.xi.1996, idem (12 males, 2 females, EMUS); idem, 23-31.ix.1997, idem (6 males, 1 female, EMUS); idem, 1-14.xi.1997, B. Dozier col. (3 males, EMUS); **Espírito Santo**, Linhares, ix.1972, Alvarenga and Roppa cols. (1 female, MNRJ); **São Paulo,** Araçatuba, Córrego Azul, ii.1946, Barreto col. (1 male, 1 female, MZSP); idem, iii.1947, idem (1 female, MZSP); Porto Cabral, Rio Paraná, 15-30.xi.1941, L. Travassos Filho col. (2 females, MZSP); **Santa Catarina,** Nova Teutônia, 27°11' S 52°23' W, 300-500 m, v.1970, F. Plaumann col. (1 male, MZSP); idem.vi.1970, idem (1 male, MZSP); idem, x.1971, idem (1 male, MZSP); **Ecuador**, **Napo,** Misahualli near Tena, 6-19.ix.2001, C. Brammer col. (2 males, EMUS); Yasani, 0°40'56" S 76°23'81" W, 250 m, 30.ix-11.x.2002, idem (2 males, 2 females, EMUS); **Peru, Loreto,** Avispa, xi.1962, B. Malkin col. (1 male, 2 females, MZSP); idem, xi.1962, L.E. Peña col. (3 females, MZSP); **Bolivia, Santa Cruz,** Espejo, ii.1972, F.H. Walz col. (1 female, DZUP, 188885).

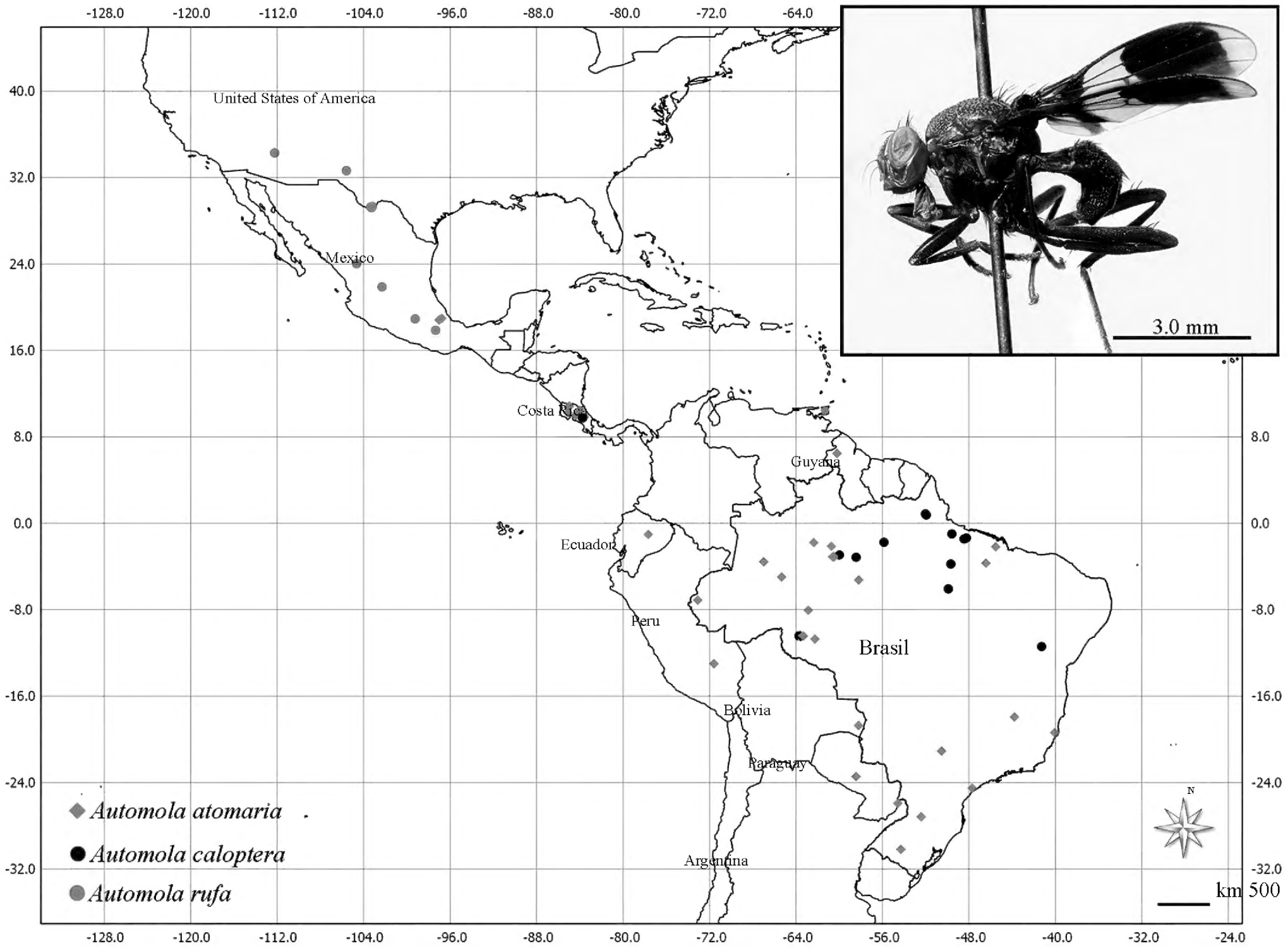


**FIGURE 1.** Geographic distribution map of *Automola* Loew species based on literature and material examined. *Automola atomaria* (Wiedemann), type-species male in the right corner.

***Automola caloptera*** (Bigot), 1886: 371 (*Wulpia*). Type-locality: Bahia, Brazil.

**Geographic distribution** (Figure 1)**:** Costa Rica (Hancock 2010); Guyana (Steyskal 1958); Brazil: PA (Steyskal 1958), BA (Bigot 1886), AP, AM, MA and RO (new records); Ecuador (new record); Peru: Urubamba River (Hendel 1911); Bolivia: Mapiri (Hendel 1911).

**Material examined: BRAZIL, Amapá,** Serra do Navio, 28.ix.1957, K. Lenko col. (1 male, MZSP); Rio Felício, 28.vii.1957, J. Lane col. (1 male, MZSP); **Pará,** Pedras, Cuminá-Mirim River, ix-x.1969, Expedição Permanente à Amazônia col. (1 male, MZSP); Marajó-Breves, 18.xi-8.xii.1987, N. Degaller col. (1 male, MPEG); idem, 20.ii.1988, Maurício col. (3 males, MPEG); Tucuruí, Tocantins River, 6.iv.1984, T. Pimentel col. (1 male, MPEG); Serra Norte, 17.v.1984, without col. (1 male, MPEG); Belém, 18-21.x.1982, I.S. Gorayeb col. (1 male, MPEG); Benevides, 18.ii.1982, R. Neto col. (1 male, MPEG); idem, 14.xi.1986, J.A. Rafael col. (2 males, 3 females, INPA); **Amazonas,** Novo Aripuanã, Reserva Soka, 05°15'53" S 60°07'08" W, 15-25.vii.1999, J. Vidal and A.L. Henriques cols. (2 males, INPA); Manaus, Reserva Ducke, 21.ix.1981, J.A. Rafael col. (1 female, INPA); idem, 21.ix.1982, idem (1 female, INPA); idem, 02-29.viii.1990, J. Vidal col. (1 male, INPA); idem, 05-16.vii.1994, F.F. Xavier col. (1 male, INPA); idem, 04-05.ii.2013, F. Mastrangelo and E. Alvin cols. (2 females, INPA); Estrada AM 01 km 134, 10.viii.1968, without col. (1 male, INPA); Estrada AM 01 km 30, Ceplac, 07.v.1976, Dellone col. (1 male, INPA); Itacoatiara, 21-26.xi.1999, J. Vidal col. (1 female, INPA); **Maranhão,** Cândido Mendes, Fazenda Sete Irmãos, 01°51'37"S 45°46'10W", Malaise Trap, 03-06.x.2008, F. Limeira de Oliveira, J.A. Rafael and P.A.M. Moraes cols. (1 females, CZMA); Reserva Biológica Gurupi, 03°14'05"S 46°41'83"W, idem, 01-06.iii.2011, F. Limeira de Oliveira and D.W.A. Marques cols. (2 females, CZMA); **Rondônia,** 62 km Southeast to Ariquemes, , 13-25.iv.1992, W.J. Hanson col. (1 male, EMUS); idem, 8-20.xi.1994, idem (1 female, EMUS); idem, 22-31.ix.1997, idem(3 males, 1 female, EMUS); idem, 1-14.xi.1997, B. Dozier col. (2 males, EMUS); **ECUADOR**, **Napo,** Misahualli near Tena, 6-19.ix.2001, C. Brammer col. (2 males, EMUS).

***Automola rufa*** Cresson, 1906: 282 (plate 6, Figure 5, wing). Type-locality: Alamogordo, New Mexico, USA.

**Geographic distribution** (Figure 1)**:** USA: TX, AZ (Steyskal 1958), NM (Cresson 1906); Mexico: Aguascalientes, Morelos (Steyskal 1958), Durango and Puebla (new records).

**Material examined: UNITED STATES OF AMERICA, Texas, Brewster Couty**, Big Bend National Park, Chisos Mountains Basin, 11.v.1959, J.F. McAlpine col. (1 male, CNC); idem, Dugout Walls, 13.v.1959, idem (1 male, CNC); idem, Oak Spring, 1370 m, 14.v.1959, W.R.M. Mason col. (1 female, CNC); **MEXICO, Durango**, Durango 14.vi.1964, idem (1 male, CNC); idem, 26.vii.1964, W.C. McGuffin col. (1 male, CNC); **Puebla**, Zapopitlan Salinas, 6.vii 1999. E

Hancock (1 male, GLAHM)

**Comments:** *Automola rufa* is the only species of the genus to occur in the United States and is recorded in arid regions.

***Epiplatea* Loew** (Figure 2)

**Comments:** *Epiplatea* includes species that do not exceed 4.5 mm in length and have a slightly robust, yellow orange or brown body. The species of genus differ from species of *Automola* in having the wing veins bare, proepimeral seta absent and prosternum bare; and differs from *Omomyia* especially in the wing, which has conspicuous transversal spots. *Epiplatea* has five valid species and is widespread in the Neotropical Region, but each species is distributed in a relatively restricted area (Figure 2).

***Epiplatea arcuata*** Hendel, 1911: 192-193. Type-locality: Meshagua, Peru.

**Geographic distribution** (Figure 2)**:** Guyana: Kartabo (Curran 1934a); Brazil: PA (Hendel 1936), RR and AM (new records); Peru: Meshagua (Hendel 1911); Bolivia (new record).

**Material examined: Brasil, Roraima,** Pacaraima, 05-08.iii.1988, Shannon Trap, J.A. Rafael and team cols. (8 males, 9 females, INPA); Uraricoera River, Maraca Island, 02-13.v.1987, Malaise Trap, idem (8 males, 10 females, INPA); idem, 18-28.viii.1987, idem (6 males, 13 females, INPA); idem, 21-30.xi.1987, idem (6 males, 30 females, INPA); **Pará,** Óbidos, Igarapé Curuçambá, 01°50'04" S 55°29'26" W, 01-08.ix.2001, Malaise Trap, J.A. Rafael and J. Vidal cols. (1 female, INPA); idem, Pajurá Farm, 01°37'05" S 55°23'21" W, 05-11.ix.2001, idem (4 females, INPA); idem, Colônia São Tomé, 01°50'46" S 55°02'23" W, 01-11.ix.2001, idem (1 female, INPA); **Amazonas,** São Gabriel da Cachoeira, Quartel, 10-17.xi.1999, R. Ale-Rocha and N. Hamada cols. (1 male, INPA); Bolawa-U, 01°48'25" N 63°47'04" W, 14.xi.1995, Malaise Trap, L.S. Aquino col. (1 female, INPA); Barcelos, Demeni River, Jalauaca, 0°16'15" S 62°44'49" W, viii.2008, Malaise Trap, A. Silva and R. Machado cols. (1 female, INPA); idem, Serrinha, 00°25'05" S 62°23'05" W, vii-viii.2007, idem, A.S. Filho and T.K. Krolow cols. (3 females, INPA); Coari, Rio Urucu, Petrobrás RUC-30, 27-30.x.1994, idem, L.E.F. Rocha and Silva cols. (4 females, INPA); Manaus, Reserva Ducke, 16-23.ix.1986, U. Barbosa and L. Aquino cols. (2 females, INPA); idem, 09.ix.1986, L.S. Aquino and U. Barbosa cols. (1 female, INPA); idem, 17.iv.1990, Malaise Trap, J. Vidal col. (1 female, INPA); idem, 16-39.xi.2006, Suspended Trap, J. Vidal and G. Freitas cols. (1 female, INPA); Novo Aripuanã, Reserva Soka, 05°15'53" S 60°07'08" W, 17-25.vii.1999, J. Vidal and A.L. Henriques cols. (1 male, 8 females, INPA); **Bolivia, La Paz Department,** Mapiri, Sarampiono, 700 m, 05.i.1903, without col. (1 female, MTD); idem, 10.i.1903, idem (1 female, MTD); idem, 21.i.1903, idem (1 female, MTD); idem, 28.i.1903, idem (1 female, MTD); idem, ii.1903, idem (1 female, MTD); idem, iii.1903, idem (1 female, MTD); **Peru**, Meshagua, Urubamba River, 11.ix.1901, without col. (1 male, 1 female, MTD); idem, 16.ix.1901, idem (1 female, MTD); idem, 9.x.1903, idem (1 male, 1 female, MTD); idem,

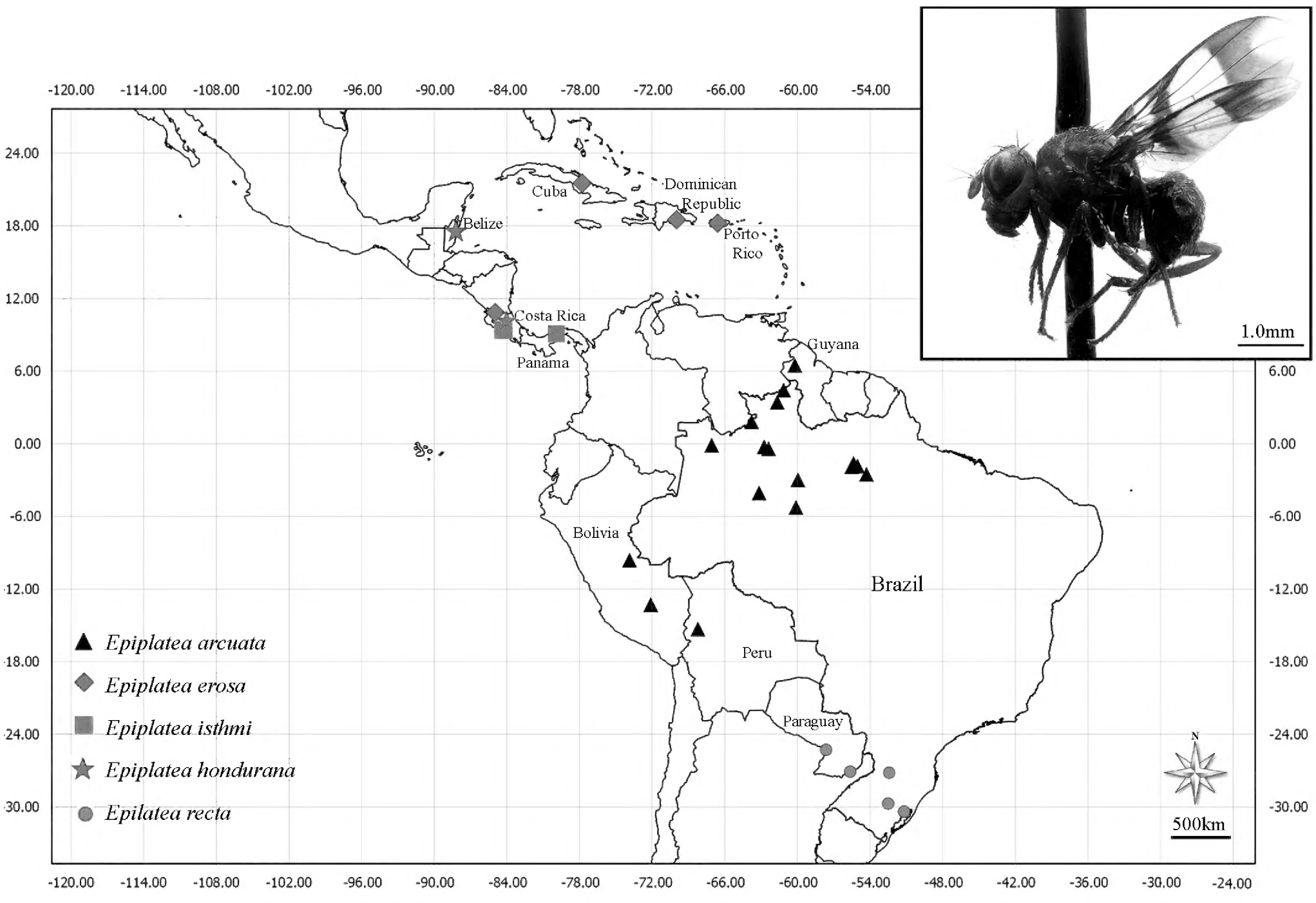


**Figure 2.** Geographic distribution map of *Epiplatea* Loew species based on literature and material examined. *Epilpatea erosa* Loew, type-species female in the right corner.

09.ix.1903, idem (1 female, MTD); idem, 10.ix.1903, idem (1 female, MTD); idem, 11.ix.1903, idem (1 female, MTD); idem, 12.ix.1903, idem (1 male, MTD); idem, 17.ix.1903, idem (1 male, MTD); idem, 26.ix.1903, idem (1 female, MTD); idem, 29.ix.1903, idem (1 female, MTD); idem, 30.ix.1903, idem (2 female, MTD); idem, 1.x.1903, idem (1 female, MTD); idem, 08.x.1903, idem (1 male, MTD); idem, 9.x.1903, idem (1 female, MTD); Ucayali River, Unini, 19.x.1903, idem (1 female, MTD); idem, 21.x.1903, idem (1 female, MTD); Puerto Yessup, Pichis River, i.1904, idem (1 female, MTD).

**Comments:** The material from MTD was identified by Emil H. Willi Hennig.

***Epiplatea erosa*** Loew, 1868: 325 (Plate 2, Figure 27, wing). Type-locality: Cuba.

**Geographic distribution** (Figure 2)**:** Cuba (Loew 1868); Puerto Rico (Wolcott 1948); Dominican Republic (Steyskal 1958), Costa Rica (new record).

**Material examined: Costa Rica, Alajuela Province,** 20 km south to Upala, 16.ix.1990, F.D. Parker col. (1 female, EMUS); idem, 24.i.1991, idem (1 female, EMUS); idem, 12.iii.1991, idem (1 female, EMUS); idem. 22-31.v.1991, idem (1 male, EMUS).

***Epiplatea hondurana*** Steyskal, 1958: 306 (Plate 1, Figure 10, Plate 2, Figures. 13, 15-18, male terminalia, leg, puparium). Type-locality: Manatee, Belize.

**Geographic distribution** (Figure 2)**:** Belize (Steyskal 1958); Costa Rica (new record).

**Material examined: Costa Rica, Limon Province,** Valle de la Estrella, 17.vi-17vii.1999, malaise trap, F. Umana (1 male, 3 females, GLAHM); **Guanacaste Province**, 9 Km south of Santa Cecilia, 1-28.ii.1995, malaise trap, P.Rios (1 female, GLAHM); **Cartago Province**, Turrialba, 2001, E. Rojas (1 female, GLAHM); **Puntarenas Province**, Golfito, 15.x-14.xi.1999, malaise trap, J. Azofeifa (1 female, GLAHM).

**Comments:** It was not possible for us to examine fresh material of this species but there are specimens in The Hunterian (Zoology Museum) University of Glasgow collected recently in Costa Rica.

***Epiplatea isthmi*** Steyskal, 1958: 308 (Plate 1, Figure 8, Plate 2, Figures 11, 14, male terminalia, leg, wing). Type-locality: Cano Saddle, Canal Zone, Panama

**Geographic distribution** (Figure 2)**:** Panama: Canal Zone (Steyskal 1958); Costa Rica (new record).

**Material examined: Costa Rica**, Limon, Hitoy Cerere, vii.1993, G.Carballo (1 female, GLAHM); idem. 13.v-15. vi.1994 (3 females, GLAHM).

**Comments:** It was not possible to examine fresh material of this species but there are specimens in The Hunterian (Zoology Museum) University of Glasgow collected recently in Costa Rica.

***Epiplatea recta*** Hendel, 1911: 193-194. Type-locality: Asunción, Paraguay.

**Geographic distribution** (Figure 2)**:** Brazil: SC and RS (new records); Paraguay (Hendel 1911).

**Material examined: Brazil, Santa Catarina,** Nova Teutônia, iii.1967, F. Plaumann col. (1 female, MZSP); **Rio Grande do Sul,** Barra do Ribeiro, Reservas Particulares do Patrimônio Natural Barba Negra, Mata da Faxina, 27.xi.2001, R.F. Krüger and F. Kirst cols. (1 male, 12 females, INPA); idem, Arroinho, 27.xi.2011, idem (1 male, 1 female, INPA); Vera Cruz, Santa Rosa Farm, vi.1964, Ramalho col. (1 female, MZSP); **Paraguay**, Asunción, 25.x.1907, without col. (2 females, MTD); idem, 08.i.1908, idem (3 females, MTD); **Itapuá,** Hohenau, 250 m, 25.x.1907, idem (2 females, MTD); idem, 26.x.1907, idem (2 females, MTD); idem, 27.x.1907, idem (2 females, MTD).

***Omomyia* Coquillett** (Figure 3)

**Comments:** The male of *Omomyia hirsuta* Coquillett (Figure 3) has quite peculiar characters that make it different from all other Richardiidae: the body is covered by dense, thin and very long setae, and the scutellum is flatted dorsoventrally, elongated and semi-retangular. For this reason the taxonomic position of *Omomyia* has been controversial. Originally, the genus was described within Coelopidae (Coquillett 1907; pg. 76). Curran (1934b; pg. 297) allocated the genus within the Pallopteridae. Subsequently, Steyskal (1973) transferred *Omomyia* to Thyreophoridae (=Piophilidae), based on the shape of the scutellum. McAlpine (1976), in an extensive discussion about the taxonomic position of *Omomyia* suggested that it shares many characters with, and possibly belongs in, Richardiidae, and is most closely related with *Epiplatea* and *Automola*. More recent authors have accepted this placement and *Omomyia* has been listed in Richardiidae (Steyskal 1987; Hancock 2010). A preliminary phylogenetic analysis corroborates this phylogenetic position (Wendt and Ale-Rocha unpublished data).

The *Omomyia* species differ from the species of *Automola* and *Epiplatea* in the following: wing without spots and apical pterostigma present; costal vein generally with spine-like setae; microtrichia very reduced; clypeus reduced and not protruded; body generally covered with dense, thin and long setae. The genus has three valid species, *O. hirsuta* Coquillett, *O. melanderi* Steyskal and *O. regularis* Curran, with distribution restricted to arid areas of southwestern United States of America (Figure 3).

***Omomyia hirsuta*** Coquillett, 1907: 76. Type-locality: Lancaster, California, USA.

**Geographic distribution** (Figure 3)**:** USA: CA (Coquillett 1907; Steyskal 1973), AZ (Steyskal 1973), UT (new record).

**Material examined: United States of America: Utah, Washington County,** Beaver Dam Slope, 1-13. vii.1984, W.J. Hanson and Clemons cols. (11 males, 11 females, EMUS); idem, 10-12.vi.1987, W.J. Hanson col. (1 female, EMUS); Snow Canyon, 13.vi.1983, W.J. idem (2 females, EMUS); **California, San Bernardino County,** Mid Hills, 26.v.1983, T. Griswold col. (1 male, EMUS); idem, 2.v.1953, C.D. MacNeill col. (1 male, CNC); Kramer Hills, 10.v.1955, W.R.M. Mason col. (1 male, CNC).

**Comments:** Records indicate the association of *O. hirsuta* with dead trunk in initial decomposition phase or flowers of *Yucca brevifolia* Engelmann (Steyskal 1973).

***Omomyia melanderi*** Steyskal, 1973: 851 (Figure 7, male terminalia). Type-locality: Hidden Valley, San Bernardino

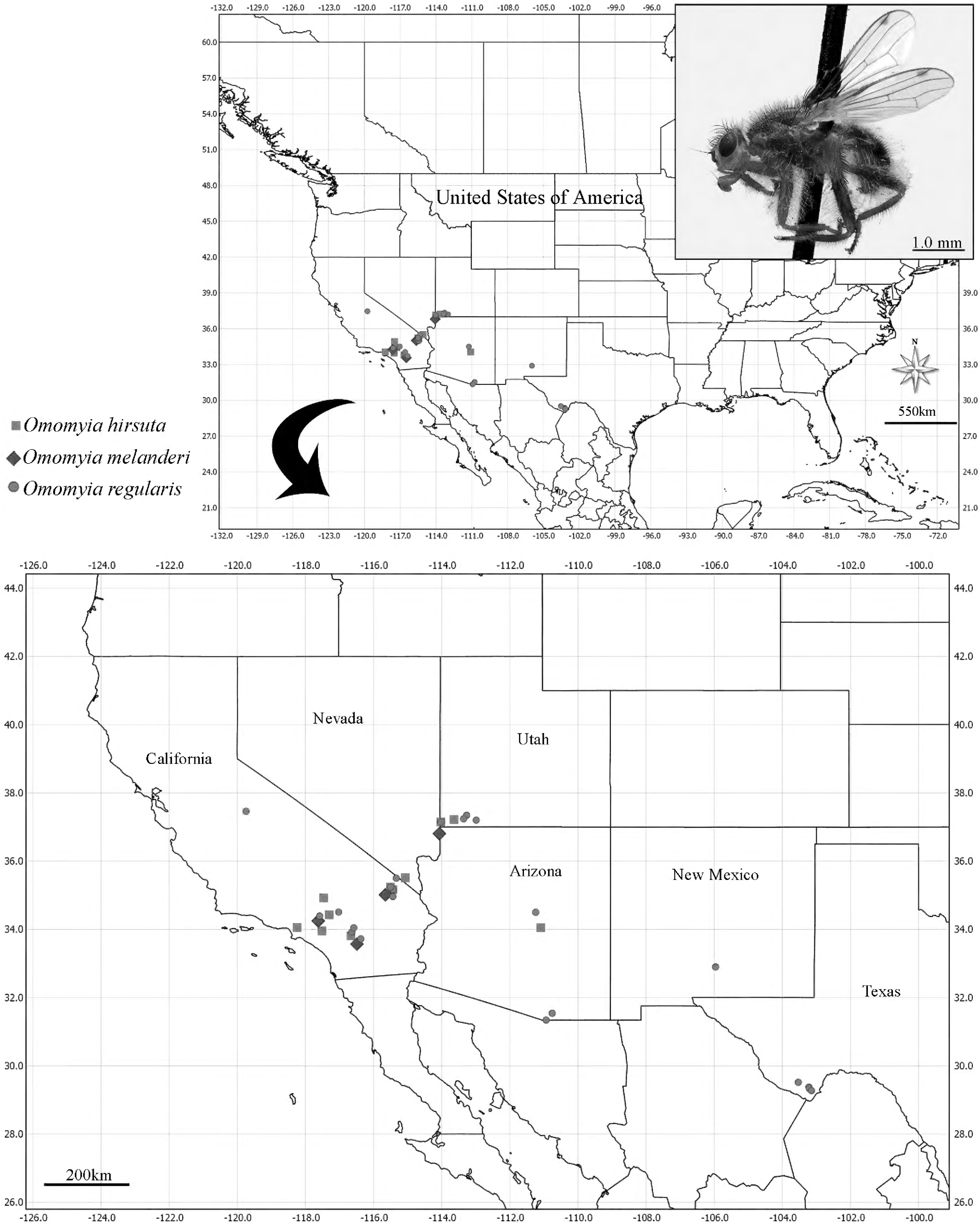


**Figure 3.** Geographic distribution map of *Omomyia* Coquillett species based on literature and material examined. *Omomyia hirsuta* Coquillett, type-species male in the right corner.

Mountais, San Bernardino County, California, USA.

**Geographic distribution** (Figure 3): USA: CA (Steyskal 1973), NV (new record).

**Material examined: Unites States of America: Nevada, Clark County,** Mesquite, 22-24.iii.1986, Pit Trap, N.M. Youssef col. (7 females, EMUS); **California, San Bernardino County,** Kelso, 31.v.1981, T. Griswold col. (1 female, EMUS); Cedar Canyon, 18.vi.1980, idem (1 female, EMUS).

**Comments:** McAlpine (1976) reported the association

of *O. regularis* Curran with flowers of *Yucca torrei* Shafer.

***Omomyia regularis*** Curran, 1935: 21. Type-locality: Arizona, USA.

**Geographic distribution** (Figure 3)**:** USA: CA, AZ, NM (Steyskal 1973); UT and TX (new records).

**Material examined: United States of America: Utah, Washington County,** Leeds Canyon, 15-18.vii.1980, Malaise Trap, without collector (1 male, EMUS); idem, 28.vii.1965, idem, W.J. Hanson col. (1 male, EMUS); idem, 23-25.vii.1994, W.J. Hanson and S. Keller cols. (3 females, EMUS); Beaver Dam Slope, 10-12.viii.1983, W.J. Hanson col. (1 male, EMUS); idem, 1-13.vii.1984, idem (1 male, EMUS); idem, 20.vii-6.viii.1987, idem (1 male, EMUS); idem, 19.viii-10.ix.1987, idem (1 female, EMUS); Pintura, 10.vii-14.viii.1986, idem (1 male, EMUS); Zion National Park, 24.vii.1981, C.R. Nelson col. (2 males, 1 female, EMUS); **California, San Bernardino County,** Wild Horse Canyon, 4300 m, 25.v.1980, T. Griswold col. (1 male, EMUS); Cima, 14.v.1980, idem (1 male, EMUS); idem, 16.v.1980, idem (1 male, EMUS); Ivanpah Valley, 29.v.1983, idem (2 males, EMUS); Mid Hills, 19-27.vi.1980, idem (6 males, 2 females, EMUS); Colton Hills, 8.vi.1980, idem (1 female, EMUS); Granite Mountains, 22-25.v.1983, idem (3 females, EMUS); Morongo Valley, 19.iv.1955, W.R. Richards col. (2 males, 4 females, CNC); White Water, 19.iii.1955, J.E.H. Martin col. (1 male, CNC); **Riverside County,** Palm Desert, 4.iv.1955, W.R.M. Mason col. (1 male, CNC); **Arizona, Santa Cruz County,** Patagonia, 10.vii.1962, H.E. Milliron col. (1 male, CNC); **Texas, Brewster County**, Big Bend National Park, Nine Point Draw, 3.v.1959, J.F. McAlpine col. (1 male, CNC); idem, Dagger Plants, 1066m, 11.v.1959, W.R.M. Mason col. [collected on *Yucca torrrei*] (12 males, 4 females, CNC); idem, Dugout Wells, 13.v.1959, J.F. McAlpine col. (1 male, CNC); idem, Panther Junction Center, 16.v.1959, idem (1 male, 1, female, CNC); idem, Grapevine Spring, 915m, 20.v.1959, idem (1 male, 2 females, CNC).

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